HISTORICAL OVERVIEW OF THE LOWER COLUMBIA AND ASTORIA, OREGON,

1792 - 1940

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Early exploration of the Pacific Northwest coast resulted from international rivalry over trade, colonization, and the search for the fabled Northwest Passage. European imperialists theorized that an all-water route existed to the Orient through the polar regions and urged an active search for it. Both Spain and England sponsored voyages of discovery along the coast of Oregón and Washington during the late 16th and early 17th centuries. The Spanish explorer Martin Aguilar claimed to have sighted a river in 1603 at the location of the Columbia but more likely had only reached the latitude of the Umpqua River.

The focus of imperial competition shifted elsewhere and further maritime exploration of the Northwest coast did not take place until the middle of the 18th century. Russian expansion into the north Pacific region caused renewed Spanish interest in the area. In 1775, an expedition under Bruno Heceta and Juan Bodega y Quadra sighted the entrance to the Columbia but failed to explore it. Quadra named his discovery the Rio San Roque.

The lure of commerce and the interest of science led to a resumption of English activity in the Pacific. On his third voyage to the Pacific, Captain James Cook passed along the Oregon coast; but bad weather and haste prevented him from sighting the mouth of the Columbia. His attention focused on the futile search for the elusive Northwest Passage. Publication of Cook's report of his third voyage inspired all of Europe with a desire for more knowledge of this dimly known area.

The quest for a water route around North American led to the development of maritime trade in furs between the Pacific Northwest and China. Competition over this fur trade ultimately determined the settlement and ownership of the region. But while English and Spanish traders plied the waters off the coast of Oregon, an American actually discovered and sailed up the river he named Columbia. In May 1792, Captain Robert Gray, while making his third reconnaissance off the Oregon coast for inlets promising trade opportunities, found and entered the mouth of the Columbia. Gray spent a week exploring the Columbia as far as Tongue Point.

While Gray sought out fur trading possibilities along the Northwest coast, the English once again appeared on the scene. Captain George Vancouver, on a diplomatic mission to treat with the Spanish Commissioner at Nootka in the spring of 1792, used the occasion to strengthen England's claims to the region. In his exploration along North Pacific coast, Vancouver learned of Gray's entrance into and naming of the Columbia River. In October 1792, Captain Vancouver returned to the Columbia and sent Lieutenant Broughton across the bar. Broughton then explored and mapped the river as far as the mouth of the Sandy River. At that place, he took possession of the land in the name of the King of England.

In the decade following Gray's discovery, British and American ships dominated the fur trade of the Northwest. Between 1795 and 1804, seventy-seven ships from those two nations traded along the coast. During this time, the Columbia became a regular port of call for traders and ultimately became a depot in an enlarged exchange that involved a growing continental fur trade (Johansen, 1967; Dodds, 1977).

For both trade and strategic reasons, President Thomas Jefferson dispatched Meriwether Lewis and William Clark to explore the newly acquired lands contained in the Louisiana Purchase and on to the Pacific Ocean. This voyage of discovery was "to explore the Missouri river, and such principal stream of it, as by its course and communication with the waters of the Pacific Ocean . . . may offer the most direct and practicable water communication across this continent for the purposes of commerce." The party also was instructed to gather scientific and ethnological information about the region and its Indian peoples.

The 33-member expedition reached the Columbia estuary a year-and-a-half after leaving the winter quarters at Fort Dubois near St. Louis. On November 6, 1805 they camped on the north shore of the river near the sea. After reconnoitering the area on both sides of the river and conversing with local Indians, the company established a winter camp about three quarters of a mile from Youngs Bay on the west bank of the Lewis and Clark River. Here they erected a fifty-foot square fort and passed a cold, damp winter. During the entire 106-day stay, only 12 were without rain. The party abandoned winter

quarters March 25, 1806 and began the long return journey to St. Louis (Johansen, 1967; Dodds, 1977).

The Lewis and Clark expedition stimulated American and English trappers to exploit the fur trade of the Far West. The three-way rivalry among the North West Company, the Hudson's Bay Company, and numerous independent American traders led to the wholesale destruction of furbearing animals in the northern plains and Rocky Mountain regions. This wasteful competition necessitated a continuous opening of the new areas further west. Within four years of Lewis and Clark's winter at the mouth of the Columbia, traders sought a permanent settlement at that locale. In 1810, Boston traders unsuccessfully attempted to establish a post on the Columbia. While that effort failed a similar venture by the great New York merchant, John Jacob Astor, met with greater initial success.

Long involved in the fur business, Astor projected a chain of trading posts between St. Louis and the mouth of the Columbia. From the latter point, his ships would conduct a Pacific coastal trade with the Indians to supplement the furs collected from the interior. Both sources would supply his New York-Canton trade. To carry out this scheme, he formed the Pacific Fur Company in June 1810, taking as his partners several ex-North West Company employees. He then dispatched two expeditions, one by land in October 1810 and the other, by sea in the previous month.

In April of 1811, the sea party on board the Tonquin entered the Columbia and selected land at Point George and Tongue Point on the south bank for the site of their post named Fort Astoria. The group then split, some clearing land and building shelter while others took the Tonquin on a trade voyage up the Northwest coast. The first of many misfortunes then befell the Astor undertaking. The ship was destroyed and the crew massacred by unfriendly Indians.

In the meantime, the overland party under Wilson Price Hunt slowly struggled west. It arrived, after incredible hardship, at Fort Astoria in the spring of 1812. A supply ship, the Beaver, sent by Astor also arrived in 1812. Despite a flurry of trading activity, Astor's venture became precarious

when war erupted between the United States and Great Britain. Astor was unable to send a supply ship in 1812, and the discouraged Astorians concluded to sell out to the British North West Company before a British warship arrived to seize the post. In November 1813, the fort changed hands; and the expected British naval vessel showed up the following month. The British renamed the settlement Fort George (Johansen, 1967; Franchere, 1967).

The United States regained possession of Fort George by the terms of the Treaty of Ghent which concluded the War of 1812. In the summer of 1818, the United States took formal possession of the post site. The North West Company, however, remained in control of Fort George and the fur trade of the Northwest. Astor had no interest in renewing his fur adventure on the Columbia. By the terms of the Convention of 1818, both countries could occupy the Oregon Territory for a period of ten years without prejudice to either nation's claims. In 1827, the two country's extended the Convention indefinitely, with the provision that either party could terminate it upon one year's notice (Johansen, 1967).

The intense rivalry between the North West Company and the Hudson's Bay Company was resolved by a merger. Astoria now came under the ownership of the Hudson's Bay Company, and in 1825 the company moved its headquarters to a new site on the north bank of the Columbia 100 miles up river. Arriving at Astoria in 1824 to investigate company operations, George Sipson described the fort as having "altogether an air or appearance of Grandeur to an Indian Trading Post," and asserted that "everything appears to me on the Columbia on too extended a scale except the Trade." Indians occupied and later burned the abandoned post at Astoria. After 1829, the company rebuilt quarters on the site of old Fort George and stationed a man there to watch for incoming vessels and to observe American traders (OHS, 1980).

Throughout the 1830s, an occasional American trading vessel entered the Columbia. However, the Hudson's Bay Company's dominant postion in the region discouraged consistent American activity. Official American interest in the Pacific Northwest, though, did not completely disappear. Lieutenant Charles Wilkes of the United States Exploring Expedition arrived at the mouth of the Columbia in 1841. Wilkes' brief encounter with the unstable entrance channel

to the Columbia gave him an unfavorable view of the river. The loss of an expedition vessel, the Peacock, while attempting to cross the bar only strengthened his negative opinion. In his reports, Wilkes wrote:

> Mere description can give little idea of the terrors of the bar of the Columbia. All who have seen it have spoken of the wildness of the scene and the incessant roar of the waters, respresenting it as one of most fearful sights that can possibly meet the eye of the sailor. The difficulty of its channel--the distance of the leading sailing marks--their uncertainty to one unacquainted with them--the want of knowledge of the strength and direction of the currents, with the necessity of approaching close to unseen dangers--the transition from clear to turbid water--all cause doubt and mistrust (Wilkes, 1845:IV,293).

Other mariners disagreed with Wilkes. In a lengthy public debate over the matter, Wilkes' subordinates on the expedition accused him of having only a superficial knowledge of the Columbia's mouth and therefore unable to accurately assess the rivers shipping potential. Claiming that they and not Wilkes had actually performed the survey at the mouth, the naval officers argued that the entrance to the Columbia, if properly marked, was superior to that of New York harbor. According to one expedition officer, Wilkes' account of the mouth of the Columbia "savored[ed] too much of romance, not to say of fable, to find a place upon the sober pages of a practical navigator and surveyor" (ARCE, 1846: LXI, No. 6, p. 19).

Whatever the merits of the controversy over the terrors of entering the Columbia, no one disagreed with Wilkes' description of the run-down appearance of Astoria in 1841:

> In the morning we had a view of the somewhat famous Astoria, which is anything but what I should wish to describe. Half a dozen log houses, with as many sheds and a pig-sty or two, are all that it can boast of, and even these appear to be rapidly going to decay (Wilkes, 1845:IV,320).

He did admit, though, that "in point of beauty of situation, few places will vie with Astoria." Missionary activiites rather than the beauty of the locale, however, drew the first settlers.

Methodist missionaries became the first permanent inhabitants in the vicinity of Astoria. Arriving in 1840, two missionary families built a mission house on Clatsop plains about three miles south of the Columbia and two miles from the Skipanon River. By 1841, the mission moved to a site on the Columbia eventually known as New Astoria and later as Hammond. Solomon Smith, a member of a missionary party, set up a store in 1840 on the west bank of the Skipanon near its mouth. This site grew into a settlement called Lexington, the first seat of Clatsop County (1844) and the first platted town in the county (1854). Lexington served as the county seat until 1854, but never overcame Astoria's importance as the key link in the growing trade between California and the Willamette Valley. By the 1870s, Lexington was virtually abandoned; and in 1890, Warrenton absorbed what little remained of the town (OHS, 1980).

Many newly-arrived Willamette Valley settlers of the early 1840s pushed on to the northwestern limits of Oregon. These pioneers settled near Astoria and began farming. In 1843, John Shively, John McClure, and A.E. Wilson took up adjoining claims at the site of present-day Astoria. Shively established the first post office in 1847. Settlement concentrated at two points: Upper town called Adairsville and lower town known as Old Fort George or McClure's Astoria. John Adair, first customs collector, located his post at the upper town, which also served as a terminus of the Astoria-Salem Military Wagon Road. A strong rivalry developed between the two portions of Astoria, and for a time some observers expected the upper one to emerge as the dominant center of trade. Gradually, the lower town won the competition, gaining all the government offices as recognition of its superiority. (Cleveland, 1903; Cadastral Survey Maps, 1856, 1863).

Lieutenant George Derby of the U.S. Topographical Corps of Engineers surveyed the Astoria-Salem route and began construction in 1855. Work progressed slowly over the rough and heavily forested terrain, and it took fifteen years to complete the road. The engineers constructing the road often found labor and supplies difficult to obtain during this time because of numerous mining booms in California and the Northwest. (Derby, 1855-1856; Jackson, 1952; Cadastral Survey Map, 1856)

Although incorporated in 1856, Astoria grew slowly in the early years. Trade between Oregon and California and the construction of the military posts at the mouth of the Columbia in the 1860s accounted for the town's early development. Its population increased from 252 in 1860 to 639 in 1870, a 154 percent jump. In the 1860s, a tannery at upper Astoria and a lumber mill in lower Astoria added to the town's commercial growth. It emerged as the main intermediate transfer point on the regular steamer service between Portland and San Francisco. Ocean steamers bound for California customarily made the trip from Portland to Astoria during the day, and tied up at Astoria over night before crossing the bar the next morning. Geographically isolated from the rest of Oregon, Astoria depended upon water transportation to foster economic growth. In 1850, Astorians constructed the first steamer built on the Columbia River to gain initial dominance of the region's chief water route. (Cleveland, 1903).

Early Astorians expressed disappointment at the town's slow development. They assumed its location near the mouth of the Columbia and good harbor guaranteed expansion. Tallmadge Ward summed up these sentiments in 1846 when he wrote, "this place [Astoria] is a beautiful situation for a town and will probably be the New York of Oregon; it has a full view of the whole harbor, and a vessel can lay at any time in perfect safety" (Ward, 1903:82). Nine years later, Charles Stevens echoed these beliefs, stating that "Upper Astoria is bound to be a large place, and the business place at the mouth of the river, though there is but a few families there now" (Rockwood, 1937:169). As late as 1882, Harper's New Monthly Magazine noted that Astoria "has always been a place of great expectations and tardy fulfillments; but the ancient Astorians will ever adduce the fact that as New York occupies a similar site at the mouth of a great river, ergo Astoria must become a great city." (p.14)

Unfortunately, Astoria's site had several drawbacks. The wide estuary prevented access to the country north of the Columbia and the high, rough terrain behind the city cut it off from the land to the south. Moreover, the hinterland of Astoria was not very productive. Finally, the actual site of Astoria--a narrow shelf of land between Coxcomb Hill and the river--allowed little room for expansion (Dicken, 1797).

Astoria did attempt to take the wheat export trade away from Portland in the mid-1870s. Claiming that Astoria could handle deeper draft vessels than Portland, promoters argued that farmers and shippers could save on towage, piloting, or literage between Portland and Astoria by shipping their wheat and flour directly to Astoria for overseas shipment. In 1874, the Astoria and Willamette Barge Company built a wharf and warehouse in Astoria to receive grain sent directly from the Willamette Valley. However, this enterprise lacked the capital and expertise to compete with the extensive shippng facilities and entrenched merchants of Portland. As the Corps of Engineers improved the Columbia ship channel after 1877, ever-larger vessels could make it safely to Portland. Astoria's experiment in wheat shipping never developed into a major activity despite a local newspaper editor's assertion "that the harbor at Astoria is as well adapted to the wants of a large commerce as any in the world" (Cleveland, 1903; Ireland, 1875:11; Rockwood, 1937:347-348).

Statistics measuring the value of exports from Astoria and Portland clearly revealed Astoria's inability to supplant Portland as the region's chief port. In 1876, Astoria exported goods valued at $1.5 million while Portland shipped $2.4 million worth of commodities. After ten years of competition, Portland's exports equalled $5.7 million and Astoria's, only $1.3 million. Astoria's percentage of the combined total of exports dropped from 38 to 19 percent over the ten year period. A comparison of the average value of exports for Astoria and Portland between 1876 and 1886 also shows Portland's superiority: $2 versus $4 million repectively (ARCE, 1876-1886).

The presence of a high ridge behind the town forced new homes and businesses to build on planked-over pilings resting on the river tide flats. New wharves containing warehouses, canneries, and sawmills pushed farther out into the Columbia. This progress can be traced in detail through the Sanborn Insurance Maps published betweeen 1884 and 1908. Poor sanitary conditions accompanied the early stages of this growth. Charles Nordhoff visited Astoria in 1874 and wrote for Harper's that "all the offal and waste (was) swept direct into the waters of the Columbia through the openings in the floors of the buildings . . . . The stench in Astoria . . . on a bright day, augmented by rotting sawdust on the beaches from the three sawmills, refuse from the slaughter house and the oil factory at Smith's Point, was something to behold" (Nordhoff, 1874; Sanborn Maps, 1884-1908).

While Astoria failed to capture Oregon's wheat export market, another industry rose to prominence that greatly stimulated the city's growth. The lower Columbia salmon fishery had it antecedents in traditional Indian subsistance patterns. Long before the white man's arrival, the Indians had developed a thriving salmon fishery along the Columbia to meet their food and trade needs. The salmon also played a powerful religious role in the Indian's culture. The natives carefully organized their fish harvests and, though the annual catch may have been as great as 18,000,000 pounds, avoided overfishing (Smith, 1979; Netboy, 1980).

The early white traders and settlers on the Columbia quickly recognized the commerical potential of the salmon and consumed it fresh, salted, and smoked. As the Indian population declined, white fisherman supplanted them. During the trading seasons of 1829 and 1830, Captain John Dominis put up and shipped to Boston 50 barrels of salmon. The fish sold for 10¢ a pound. This success encouraged others to enter the trade in salted salmon. The Hawaiian Islands and the east coast of the United States served as the chief market in this early salmon enterprise. In 1834, Captain Nathaniel Wyeth of Massachusetts attempted a fur trade and salmon fishery on the Columbia, but the Hudson's Bay Company drove him out of business. During the 1850s, several firms located near the mouth of the Columbia and engaged in packing salt salmon for export (Craig and Hacker, 1940).

The modern salmon canning industry on the Columbia began in 1866. In that year, the pioneer salmon canner George Hume established a cannery at Eagle Cliff, Washington and put up 4,000 cases. The next year °Hume increased his output to 18,000 cases and sold the entire pack. Hume's success quickly attracted others to the canning enterprise. The fourth season produced a pack 25 times the size of that canned in the first year (Smith, 1979).

By 1873, eight canneries operated on the lower Columbia, including one erected that year at Upper Astoria by Badollet and Company. Other canneries in Astoria rapidly followed; and by 1877, eleven were processing the annual catch. In 1880, Astoria claimed over half of the 35 functioning Columbia River canneries. The industry peaked in 1883 when 39 lower Columbia River processors packed a record catch of 42.8 million pounds into 629,400 cases.

workers in the mills and factories or engaged in knitting nets and preparing gear for the next season" (Cleveland, 1903; Smith, 1979).

By 1910, Scandinavians made up 19 percent (1,788) of Astoria's population; natives of Finland constituted 22 percent (2,120). The census records also reveál that the Scandinavian fishermen tended to settle in national clusters: Swedes in upper Astoria and Finns in the western portion of Astoria known as Uniontown. Some of these Scandinavians also worked as lumberjacks in the growing timber industry of the lower Columbia. As the migrants became permanent residents, they organized churches and mutual aid societies. In 1886, they organized the Finish Brotherhood and in 1890, the Scandinavian-American Society. Both organizations provided a variety of social, cultural, and economic services to their members. The Columbia River Fishermen's Protective Union, organized in 1886, cut across ethnic boundaries to unite and promote the interests of gillnet fishermen on the lower Columbia (Thirteenth Census, 1910; Passi, 1975).

In the early years of the salmon industry, Astoria conveyed the atmosphere of an unstable boom town. Possessing a floating population of 2,000 migrant laborers of diverse ethnic and racial backgrounds, Astoria presented a fertile ground for conflict and violence during the fishing season. Sporadic strikes and racial hostility flared throughout the last 25 years of the 19th century. Mostly young, single males living in crowded boarding houses or sleeping on their boats, the fisherman had few options for relaxation when not engaged in their dangerous and physically demanding occupation. Astoria quickly developed a section of town along the waterfront filled with saloons, gambling dens, dance halls, and houses of prostitution. In 1877, forty saloons operated in Astoria. The census and Sanborn Map records show that the area embraced by Water, Commercial, 5th and 9th streets contained the heart of this district between 1880 and 1910. This zone overlapped Astoria's "Chinatown" (Cleveland, 1903; Sanborn Maps, 1884-1908; Censuses, 1880-1910).

Building, much of it on pilings, occurred feverishly in the 1870s and 1880s; but the town found itself hardpressed to provide adequate housing and other services. In 1883, a fire started on the Astoria waterfront and quickly spread, consuming several blocks of businesses, wharves, and dwellings. The

developing lumber industry and growth in agricultural activity after 1885 provided an economic base for year-around employment, and Astoria's transient population gradually gave way to permanent inhabitants (Cleveland, 1903).

During the 20th century, the salmon resource declined. Overfishing, loss of habitat, and market decline resulting from price increases severely damaged the fishing resource of the lower Columbia and the Astoria economy which depended upon it. Data for the average Columbia River catch from 1880 to 1973 indicate the rate of decline:

Average Catch of Salmon

Years	Pounds
1880-1930	33.9 million
1931-1948	23.8 "
1949-1973	10.9 "

Diminishing salmon runs led Astoria canning companies to develop other fisheries such as tuna and bottom fish. During the 1940s and 1950s these operations proved successful, but changed conditions by the 1970s brought an end to all commercial canning operations in Astoria (Smith, 1979; Miller, 1958).

As the declining salmon industry weakened Astoria's economy in the early 20th century, the city received another blow. On 2 December 1922, a fire started on the downtown Astoria waterfront, and spread rapidly along the wooden viaducts which supported the streets. Before dynamite checked its furious pace, the flames consumed the largely wooden buildings and docks of 32 city blocks. Astoria lost its entire business district, valued at $12 million. Rebuilding required many years and contributed to the city's economic and population stagnation (Corning, 1956; Lockley, 1928).

Along with the salmon fishery, the timber industry became a mainstay of the lower Columbia economy in the late 19th century. Early pioneers built the first sawmill on the south bank of the river in 1844 at Cathlamet Head, 30 miles upstream from Astoria. Lumber from this operation supplied an Oregon

market and was exported to the Hawaiian Islands. Soon, enterprising individuals established mills at Hammond, Tongue Point, and Westport to capitalize on the growing California market. The export of Columbia River lumber halted during the 1860s as California began producing its own supply.

The industry revived with the coming of railroads and the development of a new export markets. Loggers improved their harvesting methods to supply the demand. In Clatsop County, the steam donkey replaced ox teams in the 1890s. As the close-in timber disappeared, logging companies built railroads to haul the timber to the water. The logs were then rafted to mills for processing.

James Welch built the first mill in Astoria in 1851, locating it on the block bounded by Commercial, Bond, 9th and 10th Streets. This mill later became the property of J.J. Parker, who operated it for many years. Other mills and box factories soon followed, built on wharves along the city's waterfront. Table V lists the mills operating in the late 19th century, as indicated by the Sanborn Insurance Maps for Astoria and Hammond (OHS, 1980; Miller 1958; Sanborn Maps, 1884-1908).

In addition to canning and timber operations, limited agricultural activiites developed along the lower Columbia. Farmers engaged in dairying, livestock raising, and vegetable crop production; but such enterprises always remained limited. Topography and climate prevented large-scale agricultural efforts. In particular, poor drainage plagued most farm land. Dyking districts formed under the 1936 Federal Flood Prevention Act have alleviated some of these problems. In 1910, farms made up only 10.3 percent of the land in Clatsop county and merely 24 percent of that acreage was improved. From 1900 to 1910, the number of farms declined from 433 to 369 in the county. The importance of dairying is reflected in the fact that the value of dairy products in 1910 ($131,991) exceeded that for all other crops. Hay and forage, used to support the dairy industry, earned $104,393 and accounted for 35 percent of the value of all crops. Dairy cows made up over half of all the cattle reported (3,325 of 6,365) and 64 percent of the value of all domestic animals. Vegetables and fruits ranked as the remaining major items of agricultural produce. Together, they constituted 19 percent of total value of all crops ($56,750) (Miller, 1958; Thirteenth Census, 1916).

Fishing, lumber, and agriculture stimulated the development of other Clatsop County communities on the lower Columbia. The small towns of Warrenton and Hammond, across Youngs Bay from Astoria, developed in the 1890s. Daniel K. Warren purchased the site of Warrenton in 1870 and built a 2.5 mile dike along the Skipanon River to protect it. The town was platted 1880 and incorporated in 1899. Several lumber mills, including the Warrenton Lumber Company established in 1902, flourished in Warrenton. Flavel, later a part of Warrenton, resulted from ambitious plans by developers to build a railroad from Flavel to Salem. Promotors began in the early 1890s by constructing a large terminal which they hoped would supplant Astoria as the chief port on the lower Columbia. Although the projectors of Flavel built a large hotel and two docks in 1896, the railroad never materialized and the site failed to dislodge Astoria. In 1918, the area jointed Warrenton. The Santa Cruz Oil Company built a lage pilchard reduction plant on the site of the old docks in 1935 (Miller, 1958).

Hammond, originally incorporated as New Astoria in 1899, was located next to Fort Stevens. The early growth of the town resulted from its position as a supply and service center for the military forces stationed at the mouth of the Columbia. When the Corps of Engineers reconstructed the fortifications as Fort Stevens in 1899, the railroad was extended to the military reservation through Hammond. When the military abandoned the fort after World War II, Hammond acquired much of the site. The Point Adams Packing Company established a cannery at Hammond in 1920 (Miller, 1958).

Fort Stevens originated during the Civil War. At that time, military authorities decided to fortify the mouth of the Columbia against enemy vessels. From 1863 to 1865, Captain George Elliot oversaw the construction of earthworks and batteries at Fort Canby on Cape Disappointment and Fort Stevens on Point Adams. By the 1880s, this installation had fallen into decay, despite the periodic repairs undertaken by the Portland District of the U.S. Corps of Engineers. For a time the Army withdrew its troops from the posts.

The outbreak of war with Spain in 1898 led to a modernization and strengthening of Fort Stevens and Canby. By 1903, the Corps of Engineers had completed the renovation project, including the installation of facilities for placing mines in the Columbia estuary. These posts remained active military

garrisons until 1947 when they were declared surplus. The forts are now state parks (Hanft, 1980; ARCE, 1989-1903).

To encourage the establishment of a naval base at Tongue Point, Astoria and Clatsop County purchased 371 acres and transferred them to the Navy in 1921. Initial work included four piers and the necessary channel dredging; but before the Navy completed the base, it was converted to a naval air station. The government did not finish construction of the revised plan until 1939. After World War II, the Navy converted Tongue Point to a temporary berthing area for the Pacific Reserve fleet (Miller, 1958).

Astoria has always felt geographically isolated from the rest of the state. The town's chief link with the major economic and population points of Oregon during the 19th century remained the river. The mountainous route of the Astoria-Salem Military Wagon Road constructed in the 1850s made it impractical for the transportation of bulky goods. Since Astorians felt that water travel and poor roads hampered their community's economic growth, they pushed for railroad connections to the Willamette Valley.

Throughout the last third of the 19th century, Astorians promoted various railroad schemes. None succeeded until A. B. Hammond took up the project in 1894. Prior efforts resulted in a short line, the Astoria and South Coast Railroad built in 1888-1889, which connected Astoria with Seaside. The goal was to push this line to a junction with either the Oregon Pacific or the Southern Pacific in the Willamette Valley. Another abortive line crossed Young's River and led up the Lewis and Clark River and over Saddle Mountain. The Flavel to Salem railroad also failed to materialize. Finally, in 1894 Hammond received a local subsidy and raised the remaining capital to build a rail link between Astoria and the Northern Pacific line at Goble. He completed this line in 1898. Between Smith's Point and Tongue Point at Astoria, the railroad was constructed on a trestle along the waterfront. The Sanborn Maps indicate in detail where it cut through various cannery, sawmill, or warehouse wharves on its route. In 1899, the railroad extended its track to Seaside and Fort Stevens. At Youngs' Bay and Warrenton, drawbridges were necessary. High freight rates kept Astoria from reaping the economic bononza that the railroad link was expected to produce (Miller, 1958; Sanborn Maps, 1908).

The constant clash between the river current and the ocean tides in the estuary of the Columbia made navigation difficult. Before construction of the jetties, the natural expansion and contraction of shoals and spits continually altered the ship channel. Littoral currents formed the unstable Midddle Sands between the north and south spits. On either side of the sands lay two navigable channels. Sand Island constituted the highpoint of the Middle Sands, but its location and size varied. Desdemona Sands adjacent to Young's Bay and Taylor Sands farther upriver also obstructed navigation in the estuary. Under such unstable shoaling conditions, charts quickly became useless.

Mariners and governmental agencies conducted numerous surveys of the mouth of the Columbia. The resulting charts indicated the existence of two channels. By the 1870s, neither of these openings provided a deep or dependable passage for the volume of commerce and the size of ships which passed up and down the river. Only foolhardy or desperate captains entered the Columbia without the assistance of a pilot or tug. Even if the channel were quickly found, its reliable depth, 17 to 21 feet, left little room to spare. Adverse weather conditions and the tremendous sea on the bar frequently detained sailing vessels weeks and streamers days. The largest ships could enter only during a smooth sea and high tide. (Willingham, 1983; OHS, 1980)

While mariners generally accepted the view that the estuary experienced constant alteration, many downplayed the dangers of the bar. Agreeing with some members of the Wilkes expedition, Lieutenant Commander William P. McArthur of the U. S. Coast Survey in 1849-1850 wrote that "the dangers of the navigation of this truly magnificent river have been vastly exaggerated." Even the Corps of Engineers became embroiled in the debate. The engineer in charge of the Portland office in 1875, Major Nathaniel Michler, wrote that "the bar cannot be considered any more dangerous than the entrance . . . into San Francisco Bay." He believed that proper channel markings, reliance on "pilots, and avoidance of storm crossings could overcome the bar's difficulties." Michler's successor, Major John Wilson, agreed that the Columbia bar had an "undeservedly bad reputation." "Properly buoyed," he stated in 1877, "it is no more dangerous than that at Sandy Hook, New York" (McArthur, 1915:258; ARCE, 1875:747, 1877:1003).

Many river users found such views unacceptable. The increase in river traffic and size of vessels severly taxed the existing, largely unimporved channel conditions. As Portland Engineer Officer Major George Gillespie noted in 1880, "the citizens of Astoria are anxious that some extensive work of improvement should be taken in hand to increase the depth of water over, the bar" (ARCE, 1880:2315).

In response to public pressure, Congress authorized in 1878 a survey at the mouth of the Columbia to determine the nature and cost of permanent improvements. After completing a preliminary survey, Gillespie agreed with his predecessors that the dangers of the bar "have been greatly and unjustly magnified" but admitted that its improvement would greatly stimulate commerce. He drew up several tentative plans for improvements, including a low-tide stone dike, extending from Point Adams (ARCE, 1879:1853).

A review board of army engineers, unconvinced that any improvement was needed at that time, rejected Gillespie's proposals. The board decided that the natural effects of tides and currents would open a channel adequate for present needs. Citizens of the area again found this conclusion unacceptable; they failed to observe any beneficial effect from the natural working of the tides and currents. Within two years, the board of review, reassembled by Congress, considered another, even larger plan for a jetty at the mouth of the Columbia.

After extensive study, the army engineer board recommended in 1882 a plan for stablizing the sands at the entrance and forcing the river to scour one permanent, deep channel across the bar. The improvement called for a 4.5 mile long low-tide jetty, extending from near Fort Stevens on the south cape by a slightly convex curve northward to a point about three miles south of Cape Disappointment. The board estimated the stone structure would provide a channel depth of 30 feet at low water.

Congress authorized and provided an initial appropriation for the Columbia River jetty project in 1884. Captain Charles Powell, selected the exact location for the structure and commenced construction that same year. Completion of the south jetty required ten years and $2 million. As early as

1889, the uncompleted jetty began to have noticeable, positive effects on the bar. When completed in 1895, the jetty measured 30 feet high at its crest and from 80 to 90 feet across its base. It attained a height of 10 to 12 feet above the low water level, except at the outer end where the height sloped sharply to four feet. The improvement produced a 30-foot channel one-half mile wide over the bar. In many places 31 feet of safe water could be relied upon. Substantial benefits to navigation soon developed. Within two years after completion of the south jetty, the value of tonnnage passing over the bar more than doubled the average for the previous decade.

Despite the benefits provided by the completion of the south jetty, major new work was necessry by 1902 in order to support navigation on the lower Columbia River. Annual surveys made at the mouth since 1897 showed that "marked shoaling" each year diminished the project depth. Nor was the channel stabilized as was essential for the ever-larger ships desiring entrance into the Columbia (ARCE, 1900, 1902).

Thus, in 1902, the Board of Engineers submitted to the Secretary of War a project designed to eliminate the shoaling and re-establish a deep and dependable channel. The plan called for major repairs to the existing 4-mile jetty, a 2.5 mile extension, and channel dredging. The engineers sought a project dpeth of 40 feet. Costs, estimated at $2,510,000, included $250,000 to re-outfit the old Army transport Grant as a dredge. The authorization for the South jetty also provided for a jetty on the north side of the mouth of the Columbia from Cape Disappointment, if that were necessary to obtain project depth.

Except for damage caused by rough seas, work on the south jetty progressed satisfactorily. Despite much effort and expense to protect the wooden structures, thousands of feet of trestle washed away each spring. By 1913, the district completed the new work on the south jetty at a cost of nearly $8 million. As reconstructed, the top width of the jetty averaged 40 feet and the height above sea level varied from 10 feet at the shore end to 24 feet at the outer end. While the engineers made numerous minor changes, they again employed basically the same construction methods used for the original jetty.

The work on the south jetty resulted in a channel depth of only 36 to 37 feet of safe water over the entrance. Therefore, the Corps decided to go ahead with construction of the north jetty so that the project depth of 40 feet could be accomplished. The cost of the 2.5 mile jetty was roughly $5 million. The engineers used the same methods of operation on the north jetty as they had employed on the south structure. Because of its more sheltered location, work proceeded more rapidly on the northern than on the southern one.

Construction began in the spring of 1914 and reached completion by May 1917. As finished, the north jetty had a top width of 25 feet and an elevation varying from 28 to 32 feet above mean lower low water. Surveys made the following spring showed the depth across the entrance at all places measured at least 40 feet. When completed, the jetties at the mouth of the Columbia River contained 9 million tons of stone and were the largest in the world. This project, Colonel George Zinn of the Portland District reported in 1917, "made it possible for the largest vessels operating on the Pacific coast to enter and leave at all normal stages of tide and in any weather except during the most severe storms." Never again would vessels stranded on the bar be a common sight (ARCE, 1917:1717).

With the rubble stone jetty exposed to incessant wave action, normal repair operations by floating plant were impossible. Maintenance had to be carried out by constructing expensive trestle and was deferred until the work required would justify the cost. By 1931, the sea had flattened the south enrockment to the low-water level and had spread out the stone so that the width of the outer 2.75 miles extended 200 feet at low-water level. From 1931 to 1936, the Portland District of the Corps of Engineers oversaw the retopping of the south jetty to 25 feet above low water to within approximately 3,300 feet of the outer end of the enrockment. The reconstruction project added 2.2 million tons of stone to the structure, with the average rock weighing 12 tons. However, constant wave action still eroded the outer end, moving stones weighing up to 25 tons each.

To halt the disintegration at the sea end, the Corps constructed a solid concrete terminal above the low-water level. As completed, the south jetty's

top width varied from 45 to 70 feet, with an elevation of 26 feet above mean lower low water. The base width of the outer portion measured approximately 350 feet, and the total height from the bottom reached up to 76 feet.

The two jetties effectively fixed the channel at the mouth, but the force of the river was insufficient to maintain a 40-foot depth. To achieve this goal, the Corps began annual dredging at the mouth in 1904. The beneficial effects of the jetties and dredging proved adequate to river user needs until 1954, when renewed demands for increased channel depth resulted in a new project. To maximize the shipping gains stemming from improvements at the mouth, the Corps of Engineers found it necessary to deepen the river to Portland (Willingham, 1983; Hickson, 1950).

Improvement of the ship channel from Portland to the sea began in 1877. The Chief of Engineers approved Portland Engineer Officer John Wilson's proposal to establish a 20-foot channel at low water on the Columbia and lower Willamette Rivers by means of dams, dikes, and revetments. Prior to this project, the Corps had provided temporary relief along the rivers by annually dredging various bars. The demands of shipping led to an increase in project depth in 1892 to 25 feet at low water and a further increase to 30 feet in 1912. The engineers achieved the latter depth by 1918.

The ever-increasing size of ships using the water-way to Portland produced demands for a 35-foot channel. The Corps achieved this depth by 1933. This level served commercial needs until World War II. By then, the size of ships had outdistanced the existing improvements of the ship channel. Moreover, regular maintenance failed to keep pace with the growing rate of channel deterioration at the mouth. Between 1926 and 1951, the safe water over the bar decreased from 46 to 42 feet and the width of the channel contracted. Larger vessels found this situation hazardous in rough weather.

To prevent further worsening of navigation conditions, Congress authorized the Corps to create and maintain an entrance channel 48-feet deep and one-half mile wide. The project got underway in 1956 and the engineers required a little over one year to complete it. As soon as local interests succeeded in getting the entrance improved, they began lobbying for a deeper ship channel to Portland.

The use of ever-larger ships and promise of greater regional economic growth prompted Congress, in 1962, to adopt a project calling for a channel 40 feet deep and 600 feet wide from the mouth of the Columbia to Portland. The improvement required extensive contraction works and dredging. The Corps completed the 12-year project in 1976 at a cost of $23 million (Willingham, 1983).

In addition to work on the main ship channel of the lower Columbia, the Corps also undertook projects at other points along the river. Two such efforts near the mouth of the Columbia on the Washington side in the 1930s benefitted the fishing industry of the area. In 1933, the Corps dredged a channel 10 feet deep and 200 feet wide from Ilwaco, at the northwest corner of Baker Bay, through the easterly passage at Sand Island to deep water in the Columbia river five miles away. The engineers also dredged another channel 10 by 200 feet and 3 miles long from Ilwaco through the westerly passage of Sand Island to the Columbia. In addition, the Corps constructed a 20-acre, 12-foot deep mooring basin and breakwater. Modifications authorized in 1945 and 1950 delayed completion of the entire project until 1957.

At the east end of Baker Bay, the small fishing town of Chinook received the Corps' attention. In 1938, Congress authorized a 10 by 150-foot channel from the head of Sand Island to Chinook, a small turning basin, and reconstruction and extension of an existing breakwater. The engineers completed the original project in 1940 and finished modifications between 1958 and 1962.

Prior to World War II, the Corps undertook two projects on the Oregon side of the Columbia below Astoria. These improvements facilitated waterborne traffic to and from the main channel at Youngs Bay and Skipanon. In 1946, Congress authorized the Corps to construct a small boat mooring basin at Astoria. The work at Youngs Bay and Youngs River provided a channel 150 feet wide and 10 feet deep to the foot of Haven Island, a distance of 6.5 miles. It benefitted the towing of log rafts and the transportation of sawmill wastes to a steam power plant at the head of the bay. The Corps had previously carried out minor snagging operations on Youngs River 1890.

The project at the Skipanon River provided a 1.8 mile-long channel, 30 feet deep and 200 feet wide from the Columbia to Warrenton; a 30-foot deep mooring basin at Warrenton; and a 6-foot deep, 40-foot wide, 4,500-foot long channel upstream from the railroad bride. The Corps completed the channel work in 1939 and the mooring basin in 1957. The work benefitted two sawmills located at Warrenton.

In 1946, Astoria was the most important fishing port in the Pacific Northwest. Resident and transient fishermen as well as pleasure craft operators pressed for a mooring basin which would at least double the existing capacity of 400 vessels. Congress approved a Corps project for a steel pile, sand-filled breakwater about 2,400 feet long with a 200-foot maintenance roadway running along its entire length and two steel pile shore wings totaling 1,460 feet in length. The Portland district completed the basin with provisions for 1,000 small boats in 1950. It ran parallel to and outside the existing pierhead line opposite 33d to 39th Streets in Astoria (Willingham, 1983).

The lower Columbia serves as the gateway to Oregon. Water transportation on this river has provided an economical outlet for the raw materials and produce of the Pacific Northwest and for the import of needed finished goods. Discovered in 1792 as a result of commercial and imperial rivalry among various European powers and the fledgling United States, the lower Columbia continued for 50 years as the focal point of such competition. During this time Astoria, also know as Fort George, developed as the chief port and population center of the area. First the North West Company and then the Hudson's Bay Company developed and dominated the early commerce in fur, lumber, and salted salmon.

Prior to 1870, Astoria grew slowly. Under the Hudson's Bay Company, it lost importance as a fur trading post to Vancouver upriver. When American emigrants began arriving in Oregon during the 1840s, the Willamette Valley attracted most of them. Good agricultural land on the lower Columbia was in short supply and oceangoing vessels could proceed as far up the Columbia and Willamette Rivers as Portland. The former fact limited the area's attraction for early immigrants who were chiefly agriculturalists; while the latter,

prevented Astoria from monopolizing the region's oceanbound commerce. After 1870, Astoria did boom as the center of the area's salmon industry. Between 1870 and 1900, the Columbia River Salmon catch averaged 30.3 million pounds yearly. Astoria canners processed a major share of these fish. In the early 20th century, the emergence of the timber industry added significantly to this growth. However, after 1920 both economic activities declined as the resources became over utilized. The decline and stagnation in Astoria's population during the 20th century reflected this situation.

The exploitation of the lower Columbia's resources attracted a variety of races and ethnic nationalities to the area. The salmon fishery workforce included large numbers of Chinese, Scandinavians, and Finns. At first, most of these were transients, but in time many of the Scandinavians and Finns settled in Astoria permanently. They worked in the lumber industry as well as the fishery. Mechanization of the canning process gradually displaced the Chinese who then moved on to other locales.

Since 1877, the Corps of Engineers has played a key role in developing the navigation potential of the lower Columbia. Both in building the massive jetties at the mouth and in dredging a ship channel 110 miles upriver to Portland, the Corps provided the means to exploit the economic resources of the region. The Corps also improved the navigation channels in the minor bays of the lower Columbia. This work largely benefited the local fishing and timber interests.

TABLE I

ASTORIA CANNERIES

CANNERIES	1884	1888	1892	1896	1908
LOWER ASTORIA					
Seaside Packing (Thistle), 1884	i/o	x	i/o	i/o	-
Washington	x	x	i/o	i/o	x
Union (Elmore), 1884	x	x	x	x	x
Cutting	x	x	x	x	x
J. Hume	x	x	i/o	i/o	x
Kinney's, 1879	x	x	x	x	x
G. Hume, 1875-88	x	x	i/o	i/o	-
W. Hume, 1875-88	x	-	-	-	-
UPPER ASTORIA					
Devlin, 1875	x	x	x	x	-
IXL, 1882	x	x	i/o	-	-
Pacific Union (G. Smith),1882-88	x	x	i/o	i/o	-
Columbia (Aberdeen, 1882-89	x	x	i/o	x	-
Occident, 1880-90	x	x	i/o	i/o	-
West Coast Packing, 1880-88	x	x	i/o	-	-
A. Booth, 1874	x	x	x	x	x
Badolett, 1873	x	x	i/o	i/o	-
George & Barkers (Point Adams), 1883	x	x	x	x	x
White Star	x	x	-	-	-
Fisherman's	x	x	i/o	i/o	-
J.O. Hanthorn, 1876	x	x	x	x	x
Wm Smith	-	x	i/o	i/o	-
Anglo-American	x	x	i/o	i/o	-
Thomas and Knowles (Eagle)	x	x	i/o	i/o	-
Scandinavian, 1876	x	x	x	x	x
	22	23	8	9	9

i/o: inoperative
x: operating
-: Status uncertain

Source: Sanborn Insurance Maps, 1884-1908

TABLE II

CHINESE CANNERY WORKERS EMPLOYED
AT ASTORIA, 1900

Cannery	No. Chinese Contractors	No. Chinese Laborers
Fisherman's Co-op	1	38
Sanborn	1	34
Elmore	1	90
Cutting	1	27
Kinney	1	105
Booth	1	33
?	-	59
?	-	18
	6	404

Source: Decennial Census, 1900

TABLE III

POPULATION OF CLATSOP COUNTY

AND ASTORIA, 1850-1980

Year	Clatsop Co.	% of Change	Chinese	Astoria	% of Change	Chinese
1850	462			205		
1860	498	7.8	3	252	22.9	3
1870	1,255	152.0	13	639	153.6	13
1880	7,222	475.5	2,301	2,803	338.7	N/A
1890	10,016	38.7	1,177	6,184	120.6	N/A
1900	12,765	27.4	614	8,381	35.5	600¶
1910	16,106	26.2	404	9,599	14.5	366
1920	23,030	43.0		14,027	46.1	
1930	21,124	-8.3		10,349	-26.2	
1940	24,697	16.9		10,389	0.4	
1950	30,776	24.6		12,331	18.7	
1960	27,380	-11.0		11,239	-8.8	
1970	28,473	4.0		10,244	-8.9	
1980	32,600	14.5		9,990	-2.5	

Source: Decennial Census, 1850-1980

TABLE IV

CHARACTERISTICS OF CLATSOP COUNTY CHINESE, 1870-1900

Characteristic	1870	%	1880	%	1900	%
Sex						
Male	13	100	2,271	98.7	584	95.7
Female			30	1.3	26	4.3
Age						
Mean	22.9	-	27.6	-	38.5	-
Mode	20	-	30	-	40	-
Marital Status						
Single	N/A	-	1,361	62.9	319	52.3
Married	N/A	-	803	37.1	209	47.5
Widowed	N/A	-	1		1	.2
Occupations						
Cannery	2	15.4	1,677	73.6	410	70.8
Cook	9	69.2	60	2.6	29	5.0
Domestic/Laundry	2	15.4	57	2.5	22	3.8
Laborer			388	17.0	50	8.6
Farmer			4	.2	27	4.7
Merchant/Storekeeper			62	2.7	32	5.5
Professional			6	.3	0	
Miscellaneous			25	1.1	9	1.6

Source: Decennial Census, 1870-1900

TABLE V

ASTORIA LUMBER MILLS,
1884-1908

MILL	1884	1888	1892	1896	1908
ASTORIA					
Parker Mill, 1851					
Hume and Farrel, 1867-83					
Trullinger (West Shore Mill, 1876-)	x	x	x	i/o	
Holt Planning Mill (Hansons)	x	x			
Clatsop Mill, 1884	x	x	x	x	x
Astoria Box and Lumber	x	x	x	x	x
Astoria Lumber, 1903					x
Tongue Point Lumber, 1903					x
WARRENTON					
Kelly Mill, 1890					x
Warrenton Lumber Co., 1902					x

i/o: inoperative
x: operating

Source: Sanborn Insurance Maps, 1884-1908
Miller, Clatsop County

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